



SEQUENCE LISTING

<110> Fish, Rahul B.
Kang, Dong-Chul
Gopalkrishnan, Rahul V.

<120> USE OF MDA-5 AS AN ANTIVIRAL AND
ANTIPROLIFERATIVE AGENT

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<150> 09/515,363

<151> 2000-02-29

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Thr Leu Glu Lys Gly Val Trp His Leu Gly Trp Thr Arg Glu Phe Val
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Pro Glu Leu Thr Asp Leu Pro Ser Pro Ser Phe Glu Asn Ala His Asp
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Lys Val Val Val Leu Val Asn Arg Val His Leu Val Thr Gln His Gly
50 55 60
Glu Glu Phe Arg Arg Met Leu Asp Gly Arg Trp Thr Val Thr Thr Leu
65 70 75 80
Ser Gly Asp Met Gly Pro Arg Ala Gly Phe Gly His Leu Ala Arg Cys
85 90 95
His Asp Leu Leu Ile Cys Thr Ala Glu Leu Leu Gln Met Ala Leu Thr
100 105 110
Ser Pro Glu Glu Glu His Val Glu Leu Thr Val Phe Ser Leu Ile
115 120 125
Val Val Asp Glu Cys His His Thr His Lys Asp Thr Val Tyr Asn Val
130 135 140
Ile Met Ser Gln Tyr Leu Glu Leu Lys Leu Gln Arg Ala Gln Pro Leu
145 150 155 160
Pro Gln Val Leu Gly Leu Thr Ala Ser Pro Gly Thr Gly Gly Ala Ser
165 170 175
Lys Leu Asp Gly Ala Ile Asn His Val Leu Gln Leu Cys Ala Asn Leu
180 185 190
Asp Thr Trp Cys Ile Met Ser Pro Gln Asn Cys Cys Pro Gln Leu Gln

195	200	205
Glu His Ser Gln Gln Pro Cys Lys Gln Tyr Asn Leu Cys His Arg Arg		
210	215	220
Ser Gln Asp Pro Phe Gly Asp Leu Leu Lys Lys Leu Met Asp Gln Ile		
225	230	235
His Asp His Leu Glu Met Pro Glu Leu Ser Arg Lys Phe Gly Thr Gln		
245	250	255
Met Tyr Glu Gln Gln Val Val Lys Leu Ser Glu Ala Ala Ala Leu Ala		
260	265	270
Gly Leu Gln Glu Gln Arg Val Tyr Ala Leu His Leu Arg Arg Tyr Asn		
275	280	285
Asp Ala Leu Leu Ile His Asp Thr Val Arg Ala Val Asp Ala Leu Ala		
290	295	300
Ala Leu Gln Asp Phe Tyr His Arg Glu His Val Thr Lys Thr Gln Ile		
305	310	315
Leu Cys Ala Glu Arg Arg Leu Leu Ala Leu Phe Asp Asp Arg Lys Asn		
325	330	335
Glu Leu Ala His Leu Ala Thr His Gly Pro Glu Asn Pro Lys Leu Glu		
340	345	350
Met Leu Glu Lys Ile Leu Gln Arg Gln Phe Ser Ser Ser Asn Ser Pro		
355	360	365
Arg Gly Ile Ile Phe Thr Arg Thr Arg Gln Ser Ala His Ser Leu Leu		
370	375	380
Leu Trp Leu Gln Gln Gln Gln Gly Leu Gln Thr Val Asp Ile Arg Ala		
385	390	395
Gln Leu Leu Ile Gly Ala Gly Asn Ser Ser Gln Ser Thr His Met Thr		
405	410	415
Gln Arg Asp Gln Gln Glu Val Ile Gln Lys Phe Gln Asp Gly Thr Leu		
420	425	430
Asn Leu Leu Val Ala Thr Ser Val Ala Glu Glu Gly Leu Asp Ile Pro		
435	440	445
His Cys Asn Val Val Val Arg Tyr Gly Leu Leu Thr Asn Glu Ile Ser		
450	455	460
Met Val Gln Ala Arg Gly Arg Ala Trp Ala Asp Gln Ser Val Tyr Ala		
465	470	475
Phe Val Ala Thr Glu Gly		480
485		

<210> 13
 <211> 514
 <212> PRT
 <213> sus scrofa

<400> 13
His Thr Tyr Ser Pro Leu Lys Pro Arg Lys Tyr Gln Leu Glu Leu Ala
1 5 10 15
Leu Pro Ala Gln Asn Gly Lys Asn Thr Ile Ile Cys Ala Pro Thr Gly
20 25 30
Cys Gly Lys Thr Phe Val Ser Leu Leu Ile Cys Glu His His Leu Lys
35 40 45
Lys Phe Pro Arg Gly Arg Lys Gly Lys Val Val Phe Phe Ala Ile Gln
50 55 60
Leu Pro Val Tyr Glu Gln Lys Ser Val Phe Ser Lys His Phe Glu
65 70 75 80
Arg Leu Gly Tyr Lys Val Ala Gly Ile Ser Gly Ala Thr Ser Asp Thr
85 90 95

<211> 416
 <212> PRT
 <213> homo sapiens

<400> 14

Asn	Leu	Tyr	Ser	Pro	Phe	Lys	Pro	Arg	Asn	Tyr	Gln	Leu	Glu	Leu	Ala
1				5					10					15	
Leu	Pro	Ala	Met	Lys	Gly	Lys	Asn	Thr	Ile	Ile	Cys	Ala	Pro	Thr	Gly
		20					25					30			
Cys	Phe	Lys	Thr	Phe	Val	Ser	Leu	Leu	Ile	Cys	Glu	His	His	Leu	Lys
	35					40					45				
Lys	Phe	Pro	Gln	Gly	Gln	Lys	Gly	Lys	Val	Val	Phe	Phe	Ala	Asn	Gln
	50				55					60					
Ile	Pro	Val	Tyr	Glu	Gln	Gln	Lys	Ser	Val	Phe	Ser	Lys	Tyr	Phe	Glu
65				70					75					80	
Arg	His	Gly	Tyr	Arg	Val	Thr	Gly	Ile	Ser	Gly	Ala	Thr	Ala	Glu	Asn
			85					90						95	
Val	Pro	Val	Glu	Gln	Ile	Val	Glu	Asn	Asn	Asp	Ile	Ile	Ile	Leu	Thr
			100				105						110		
Pro	Gln	Ile	Leu	Val	Asn	Asn	Leu	Lys	Lys	Gly	Thr	Ile	Pro	Ser	Leu
		115					120					125			
Ser	Ile	Phe	Thr	Leu	Met	Ile	Phe	Asp	Glu	Cys	His	Asn	Thr	Ser	Lys
	130				135						140				
Gln	His	Pro	Tyr	Asn	Met	Ile	Met	Phe	Asn	Tyr	Leu	Asp	Gln	Lys	Leu
145				150						155					160
Gly	Gly	Ser	Ser	Gly	Pro	Leu	Pro	Gln	Val	Ile	Gly	Leu	Thr	Ala	Ser
			165					170						175	
Val	Gly	Val	Gly	Asp	Ala	Lys	Asn	Thr	Asp	Glu	Ala	Leu	Asp	Tyr	Ile
			180				185						190		
Cys	Lys	Leu	Cys	Ala	Ser	Val	Ile	Ala	Thr	Val	Lys	His	Asn	Leu	Glu
	195						200					205			
Glu	Leu	Glu	Gln	Val	Val	Tyr	Lys	Pro	Gln	Lys	Phe	Phe	Arg	Lys	Val
	210					215					220				
Glu	Ser	Arg	Ile	Ser	Asp	Lys	Phe	Lys	Tyr	Ile	Ile	Ala	Gln	Leu	Met
225				230						235					240
Arg	Asp	Thr	Glu	Ser	Leu	Ala	Lys	Arg	Ile	Cys	Lys	Asp	Leu	Glu	Asn
			245					250						255	
Leu	Ser	Gln	Ile	Gln	Asn	Arg	Glu	Lys	Leu	Gln	Glu	Leu	Glu	Ser	Val
		260					265						270		
Ser	Arg	Asp	Pro	Ser	Asn	Glu	Asn	Pro	Lys	Leu	Glu	Asp	Leu	Cys	Phe
		275				280						285			
Ile	Leu	Gln	Glu	Glu	Tyr	His	Leu	Asn	Pro	Glu	Thr	Ile	Thr	Ile	Leu
	290					295					300				
Phe	Val	Lys	Thr	Arg	Ala	Leu	Val	Asp	Ala	Leu	Lys	Asn	Trp	Ile	Glu
305				310						315					320
Gly	Asn	Pro	Lys	Leu	Ser	Phe	Leu	Lys	Pro	Gly	Ile	Leu	Thr	Gly	Arg
			325					330						335	
Gly	Lys	Thr	Asn	Gln	Asn	Thr	Gly	Met	Thr	Leu	Pro	Ala	Gln	Lys	Cys
			340				345						350		
Ile	Leu	Asp	Ala	Phe	Lys	Ala	Ser	Gly	Asp	His	Asn	Ile	Leu	Ile	Ala
		355					360					365			
Thr	Ser	Val	Ala	Asp	Glu	Gly	Ile	Asp	Ile	Ala	Gln	Cys	Asn	Leu	Val
	370					375					380				
Ile	Leu	Tyr	Glu	Tyr	Val	Gly	Asn	Val	Ile	Lys	Met	Ile	Gln	Thr	Arg
385				390						395					400
Gly	Arg	Gly	Arg	Ala	Arg	Gly	Ser	Lys	Cys	Phe	Leu	Leu	Thr	Ser	Asn
			405						410					415	

<210> 15
 <211> 503
 <212> PRT
 <213> caenorhabditis elegans

<400> 15
 Ala Asp Leu Gln Cys Phe Asn Pro Arg Asp Tyr Gln Val Glu Leu Leu
 1 5 10 15
 Asp Lys Ala Thr Lys Lys Asn Thr Ile Val Gln Leu Gly Thr Gly Ser
 20 25 30
 Gly Lys Thr Phe Ile Ala Val Leu Leu Lys Glu Tyr Gly Val Gln
 35 40 45
 Leu Phe Ala Pro Leu Asp Gln Gly Gly Lys Arg Ala Phe Phe Val Val
 50 55 60
 Glu Lys Val Asn Leu Val Glu Gln Gln Ala Ile His Ile Glu Val His
 65 70 75 80
 Thr Ser Phe Lys Val Gly Gln Val His Gly Gln Thr Ser Ser Gly Leu
 85 90 95
 Trp Asp Ser Lys Glu Gln Cys Asp Gln Phe Met Lys Arg His His Val
 100 105 110
 Val Val Ile Thr Ala Gln Cys Leu Leu Asp Leu Ile Arg His Ala Tyr
 115 120 125
 Leu Lys Ile Glu Asp Met Cys Val Leu Ile Phe Asp Glu Cys His His
 130 135 140
 Ala Leu Gly Ser Gln His Pro Tyr Arg Ser Ile Met Val Asp Tyr Lys
 145 150 155 160
 Leu Leu Lys Lys Asp Lys Pro Val Pro Arg Val Leu Gly Leu Thr Ala
 165 170 175
 Ser Leu Ile Lys Ala Lys Val Ala Pro Glu Lys Leu Met Glu Gln Leu
 180 185 190
 Lys Lys Leu Glu Ser Ala Met Asp Ser Val Ile Glu Thr Ala Ser Asp
 195 200 205
 Leu Val Ser Leu Ser Lys Tyr Gly Ala Lys Pro Tyr Glu Val Val Ile
 210 215 220
 Ile Cys Lys Asp Phe Glu Ile Gly Cys Leu Gly Ile Pro Asn Phe Asp
 225 230 235 240
 Thr Val Ile Glu Ile Phe Asp Glu Thr Val Ala Phe Val Asn Thr Thr
 245 250 255
 Thr Glu Phe His Pro Asp Leu Asp Leu Asp Pro Arg Arg Pro Ile Lys
 260 265 270
 Asp Ser Leu Lys Thr Thr Arg Ala Val Phe Arg Gln Leu Gly Pro Trp
 275 280 285
 Ala Ala Trp Arg Thr Ala Gln Val Trp Glu Lys Glu Leu Gly Lys Ile
 290 295 300
 Ile Lys Ser Gln Val Leu Pro Asp Lys Thr Leu Arg Phe Leu Asn Met
 305 310 315 320
 Ala Lys Thr Ser Met Ile Thr Ile Lys Arg Leu Leu Glu Pro Glu Met
 325 330 335
 Lys Lys Ile Lys Ser Ile Glu Ala Leu Arg Pro Tyr Val Pro Gln Arg
 340 345 350
 Val Ile Arg Leu Phe Glu Ile Leu Glu Thr Phe Asn Pro Glu Phe Gln
 355 360 365
 Lys Glu Arg Met Lys Leu Glu Lys Ala Glu His Leu Ser Ala Ile Ile
 370 375 380
 Phe Val Asp Gln Arg Tyr Ile Ala Tyr Ser Leu Leu Leu Met Met Arg

385					390					395				400	
His	Ile	Lys	Ser	Trp	Glu	Pro	Lys	Phe	Lys	Phe	Val	Asn	Pro	Asp	Tyr
				405					410					415	
Val	Val	Gly	Ala	Ser	Gly	Arg	Asn	Leu	Ala	Ser	Ser	Asp	Ser	Gln	Gly
			420					425					430		
Leu	His	Lys	Arg	Gln	Thr	Glu	Val	Leu	Arg	Arg	Phe	His	Arg	Asn	Glu
		435					440					445			
Ile	Asn	Cys	Leu	Ile	Ala	Thr	Ser	Val	Leu	Glu	Glu	Gly	Val	Asp	Val
	450					455					460				
Lys	Gln	Cys	Asn	Leu	Val	Ile	Lys	Phe	Asp	Arg	Pro	Leu	Asp	Met	Arg
465					470					475					480
Ser	Tyr	Val	Gln	Ser	Lys	Gly	Arg	Ala	Arg	Arg	Ala	Gly	Ser	Arg	Tyr
				485				490						495	
Val	Ile	Thr	Val	Glu	Glu	Lys									
			500												

<210> 16
 <211> 549
 <212> PRT
 <213> arabidopsis thaliana

<400> 16															
Glu	Lys	Val	Val	Glu	Gln	Ala	Arg	Arg	Tyr	Gln	Leu	Asp	Val	Leu	
1			5				10						15		
Glu	Gln	Ala	Lys	Ala	Lys	Asn	Thr	Ile	Ala	Phe	Leu	Glu	Thr	Gly	Ala
			20				25						30		
Gly	Lys	Thr	Leu	Ile	Ala	Ile	Leu	Leu	Ile	Lys	Ser	Val	His	Lys	Asp
		35				40					45				
Leu	Met	Ser	Gln	Asn	Arg	Lys	Met	Leu	Ser	Val	Phe	Leu	Val	Pro	Lys
	50					55					60				
Val	Pro	Leu	Val	Tyr	Gln	Ala	Glu	Val	Ile	Arg	Asn	Gln	Thr	Cys	
65					70				75					80	
Phe	Gln	Val	Gly	His	Tyr	Cys	Gly	Glu	Met	Gly	Gln	Asp	Phe	Trp	Asp
				85				90						95	
Ser	Arg	Arg	Trp	Gln	Arg	Glu	Phe	Glu	Ser	Lys	Gln	Val	Leu	Val	Met
			100				105						110		
Thr	Ala	Gln	Ile	Leu	Leu	Asn	Ile	Leu	Arg	His	Ser	Ile	Ile	Arg	Met
		115				120						125			
Glu	Thr	Ile	Asp	Leu	Leu	Ile	Leu	Asp	Glu	Cys	His	His	Ala	Val	Lys
	130					135					140				
Lys	His	Pro	Tyr	Ser	Leu	Val	Met	Ser	Glu	Phe	Tyr	His	Thr	Thr	Pro
145					150					155					160
Lys	Asp	Lys	Arg	Pro	Ala	Ile	Phe	Gly	Met	Thr	Ala	Ser	Pro	Val	Asn
				165				170						175	
Leu	Lys	Gly	Val	Ser	Ser	Gln	Val	Asp	Cys	Ala	Ile	Lys	Ile	Arg	Asn
			180					185					190		
Leu	Glu	Thr	Lys	Leu	Asp	Ser	Thr	Val	Cys	Thr	Ile	Lys	Asp	Arg	Lys
		195				200						205			
Glu	Leu	Glu	Lys	His	Val	Pro	Met	Pro	Ser	Glu	Ile	Val	Val	Glu	Tyr
	210					215					220				
Asp	Lys	Ala	Ala	Thr	Met	Trp	Ser	Leu	His	Glu	Thr	Ile	Lys	Gln	Met
225					230					235					240
Ile	Ala	Ala	Val	Glu	Ala	Ala	Gln	Ala	Ser	Ser	Arg	Lys	Ser	Lys	
			245					250					255		
Trp	Gln	Phe	Met	Gly	Ala	Arg	Asp	Ala	Gly	Ala	Lys	Asp	Glu	Leu	Arg
			260					265					270		

Gln Val Tyr Gly Val Ser Glu Arg Thr Glu Ser Asp Gly Ala Ala Asn
 275 280 285
 Leu Ile His Lys Leu Arg Ala Ile Asn Tyr Thr Leu Ala Glu Leu Gly
 290 295 300
 Gln Trp Cys Ala Tyr Lys Val Gly Gln Ser Phe Leu Ser Ala Leu Gln
 305 310 315 320
 Ser Asp Glu Arg Val Asn Phe Gln Val Asp Val Lys Phe Gln Glu Ser
 325 330 335
 Tyr Leu Ser Glu Val Val Ser Leu Leu Gln Cys Glu Leu Leu Glu Gly
 340 345 350
 Ala Ala Ala Glu Lys Val Ala Ala Glu Val Gly Lys Pro Glu Asn Gly
 355 360 365
 Asn Ala His Asp Glu Met Glu Glu Gly Glu Leu Pro Asp Asp Pro Val
 370 375 380
 Val Ser Gly Gly Glu His Val Asp Glu Val Ile Gly Ala Ala Val Ala
 385 390 395 400
 Asp Gly Lys Val Thr Pro Lys Val Gln Ser Leu Ile Lys Leu Leu Leu
 405 410 415
 Lys Tyr Gln His Thr Ala Asp Phe Arg Ala Ile Val Phe Val Glu Arg
 420 425 430
 Val Val Ala Ala Leu Val Leu Pro Lys Val Phe Ala Glu Leu Pro Ser
 435 440 445
 Leu Ser Phe Ile Arg Cys Ala Ser Met Ile Gly His Asn Asn Ser Gln
 450 455 460
 Glu Met Lys Ser Ser Gln Met Gln Asp Thr Ile Ser Lys Phe Arg Asp
 465 470 475 480
 Gly His Val Thr Leu Leu Val Ala Thr Ser Val Ala Glu Glu Gly Leu
 485 490 495
 Asp Ile Arg Gln Cys Asn Val Val Met Arg Phe Asp Leu Ala Lys Thr
 500 505 510
 Val Leu Ala Tyr Ile Gln Ser Arg Gly Arg Ala Arg Lys Pro Gly Ser
 515 520 525
 Asp Tyr Ile Leu Met Val Glu Arg Gly Asn Val Ser His Ala Ala Phe
 530 535 540
 Leu Arg Asn Ala Arg
 545

<210> 17

<211> 485

<212> PRT

<213> schizosaccharomyces pombe

<400> 17

Ser Phe Leu Leu Pro Gln Leu Leu Arg Lys Tyr Gln Gln Asp Val Tyr
 1 5 10 15
 Asn Ile Ala Ser Lys Gln Asn Thr Leu Leu Val Met Arg Thr Gly Ala
 20 25 30
 Gly Lys Thr Leu Leu Ala Val Lys Leu Ile Lys Gln Lys Leu Glu Glu
 35 40 45
 Gln Ile Leu Ile Gln Glu Ser Asn Leu Glu His Lys Lys Ile Ser Val
 50 55 60
 Phe Leu Val Asn Lys Val Pro Leu Val Phe Gln Gln Ala Glu Tyr Ile
 65 70 75 80
 Arg Ser Gln Leu Pro Ala Lys Val Gly Met Phe Tyr Gly Glu Leu Ser
 85 90 95
 Ile Glu Met Ser Glu Gln Leu Leu Thr Asn Ile Ile Leu Lys Tyr Asn

